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October 21, 2007

Jim Maxwell
Fire Test Company

RE: STEP BY STEP PROCEDURE TO MINIMIZE LIGHTNING DAMAGE TO FIRE ALARM SYSTEMS

Dear Jim,

I have developed a very simple step by step procedure for you and others to follow if you are experiencing damage to fire alarm systems in a campus type environment. The reason that a campus environment results in more damage to a fire alarm system than within single building is because of lightning induced Ground Potential Rise (GPR) and the potential stress that this phenomenon causes between buildings.

STEP BY STEP PROCEDURE:

1. Master Fire Alarm Panel shall have one ground point {(Singe Point Ground, (SPG)} and that ground should have a resistance to remote earth of less than one (1) ohm. (Use building steel or water pipe.)

2. All fire alarm sub-panels and other fire alarm system components throughout the campus shall be bonded, with a single looping ground wire (#14 Gauge) or larger (#2 gauge preferred), back to the SPG at the master fire alarm panel. (This holds all system components to nearly the same potential difference.)

3. AC Power Service to the master fire alarm panel shall be surge protected with solid state surge (SAD) protection. (This prevents lightning surges from passing into the main fire alarm panel from the building AC Power supply.) I recommend Transtector model MCP-120TA-10M / contact Mr. Tim Winde 800-882-9110 ext: 6160.

4. Any AC Power Service to alarm system components around the campus, other than the Master Fire Alarm Panel, may also require solid state surge (SAD) protection.

5. Shunting type surge suppression on the circuit pairs between the Master Fire Alarm Panel and sub-panels may be marginally effective if they are solid state (SAD or MOV) protectors. (Shunting type surge protection is not very effective in a GPR location.)

6. If damage to system components continues with completing steps 1 through 5 then the solution requires the use of isolation type equipment, which is quite expensive. I recommend Positron Inc., Teleline Isolator / contact Mr. Richard Knight 505-298-5400.

Sincerely,

Ernest M. Duckworth Jr., P.E.
President LPGI & Affiliates